भारतीय मानक
Indian Standard

IS 1784 : 2020

ड्रमों के चूडीदार ढक्कन — विशिष्टि

(चौथा पुनरीक्षण)

Screwed Closures for Drums — Specification

(Fourth Revision)

ICS 55.140

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Metal Containers Sectional Committee, PGD 38

FOREWORD

This Indian Standard (Fourth Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Metal Containers Sectional Committee had been approved by the Production and General Engineering Division Council.

This standard was first published in 1961 and subsequently revised in 1977, 1984 and 1998. The fourth revision has been taken up to keep pace with the latest technological developments and international practices.

In this revision following major changes have been made:

a) Various dimensions and tolerances of 50 mm and 20 mm flange, steel bung and capseal have been modified in line with international practices; and
b) The material requirements for flange and capseal has been modified.

Screwed closures commonly used on large drums are covered in this standard. Other types of closure for drums are covered in IS2474 .

In the fourth revision of this standard, necessary assistance has been derived from ISO 15750-3 'Packaging — Steel drums — Part 3: Inserted flange-type closure systems' issued by International Organization for Standardization.

The composition of the Committee, responsible for the formulation of this standard is given at Annex A.

For the purpose of deciding whether a particular requirement of this standard is complied with the final value, observed or calculated, expressing the result of a test or analysis shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

SCREWED CLOSURES FOR DRUMS — SPECIFICATION

(Fourth Revision)

1 SCOPE

1.1 This standard prescribes the requirements and methods of tests for steel and zinc alloy closures used on drums of nominal capacity of 200 litres with fixed ends [*see* IS 1783 (Part 1 and 2)].

1.2 Two nominal sizes of closures, 50 mm and 20 mm have been covered in this standard.

2 REFERENCES

The following Indian Standards contain provisions, which through reference in this text, constitute provisions of this standard. At the time of the publication, the editions indicated below were valid. All the standards are subject to revision, and parties to agreement based on this standard are encouraged to investigate the possibility applying the most recent edition of the standard:

IS No.	*Title*
513 (Part 1) : 2016	Cold reduced carbon steel sheet and strip: Part 1 Cold forming and drawing purpose (*sixth revision*)
742 : 1981	Specifications for zinc base alloy die castings (*second revision*)
1079 : 2017	Hot rolled carbon steel sheet, plate and strip — Specification (*seventh revision*)
1394 : 1984	Glossary of terms relating to metal containers (*third revision*)
1993 : 2018/ ISO 11949 : 2016	Cold-reduced tinmill products — Electrolytic tinplate (*fifth revision*)
2643 : 2005/ ISO 228-1 : 2000	Pipe threads where pressure-tight joints are not made on the threads — Dimensions, tolerances and designation (*third revision*)
10216 : 1988/ ISO 228-2 : 1987	Pipe threads where pressure-tight joints are not made on the threads — Verification by means of limit gauges (*first revision*)
12591 : 2018/ ISO 11950 : 2016	Cold-reduced tinmill products — Electrolytic chromium/chromium oxide-coated steel (*second revision*)

3 TERMINOLOGY

For the purpose of this standard, the definitions given in IS 1394 shall apply.

4 MATERIALS

The various components of the screwed closure assembly are shown in Fig. 1. Materials used for the manufacture of different components of steel closures shall be as given in **4.1** to **4.4**. Supply of capseal and tag ring with closures is optional and as agreed between the supplier and the purchaser.

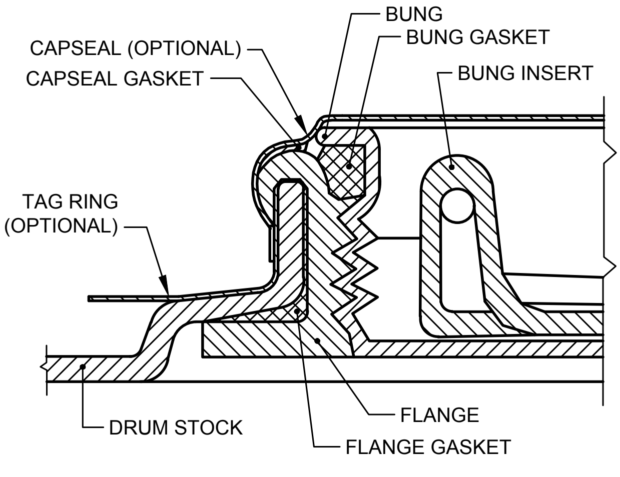


FIG. 1 SCREW CLOSURE ASSEMBLY

4.1 Flange and Flange Gasket

4.1.1 Flanges shall be made from low carbon steel sheet conforming to grade CR2 or CR3 of IS 513 (Part 1) or grade HR3 or HR4 of IS 1079. Other metals and/or configurations may be as agreed between the manufacturer and the purchaser.

4.1.2 Flange gaskets shall be made from elastomer or thermoplastics. The specific type of elastomer and/or configuration may be as agreed between the manufacturer and the purchaser.

4.2 Bung and Bung Gasket

4.2.1 Bungs shall be made from low carbon steel sheet conforming to grade CR2 or CR3 of IS 513 (Part 1) or grade HR3 or HR4 of IS 1079 or zinc alloy conforming to IS 742. Any other material and/or configuration may be as agreed between the manufacturer and the purchaser. Nominal sheet thickness for the bungs shall be 1.1 mm to 1.3 mm. Nominal sheet thickness for 50 mm and 20 mm insert shall be 1.6 mm and 2.0 mm respectively.

4.2.2 Bung gaskets shall be made from elastomer or thermoplastic. The specific types of elastomer, thermoplastic and/or configuration may be as agreed between the manufacturer and the purchaser.

4.3 Capseal

4.3.1 Capseals shall be made from electrolytic tinplate conforming to IS 1993 or tin free steel conforming to IS 12951. Other materials and/or configurations may be as agreed between the manufacturer and the purchaser. The nominal thickness of sheet shall be 0.30 mm. The capseals may be plain or printed.

4.3.2 PVC or any other suitable material shall be flowed-in to form capseal gasket for ensuring leak proofness.

4.4 Tag Ring

Tag ring shall be made from low carbon steel sheet conforming to IS 513 (Part 1). Other materials and/or configuration may be as agreed between supplier and the purchaser. Nominal sheet thickness shall be 0.30 mm.

5 MANUFACTURE

5.1 Bungs

Steel bungs shall be deep-drawn, thread rolled and shall have a wrenching insert projection welded to the bottom sump of the bung, as shown in Fig. 3.

5.1.1 The bung shall fit 'Go Gauge' dimensions conforming to IS 2643.

5.1.2 Zinc alloy bungs shall be pressure die-cast and shall conform to Fig. 6. Two diagonally opposite apertures for sealing purposes shall be provided.

5.2 Flange

The flange shall be pressed and machined.

5.3 Capseal

The capseal shall be pressed to the shape.

5.4 Tag Ring

The tag ring shall be pressed to the required shape.

6 DIMENSIONS AND TOLERANCES

The dimensions of the closures shall be according to Fig. 2 to Fig. 6. The nominal pitch diameter and the pitch of the thread of the closures 50 mm and 20 mm shall conform to IS 2643. These closures shall fit Go gauges conforming to IS 10216.

7 FINISHES

The nature of the external and internal finish shall be as agreed between the supplier and the purchaser.

8 TESTS

8.1 Interchangeability

All flanges and bungs of the same size shall be interchangeable throughout the consignment.

8.2 Air Pressure Test

The bung, bung washer and flange should be assembled on a suitable test fixture. Bung should be tightened to a torque specified below:

Bung Size	*Minimum Torque Value*
50 mm	30-35 N.m
20 mm	15-20 N.m

The assembly shall be subjected to an internal air pressure of 4.0 kg/cm^2. There shall not be any drop of pressure or leakage.

8.3 Torque Test for Steel Bungs

8.3.1 The wrenching insert and threads of bung shall withstand, without breakage, the torque values specified below:

Bung Size	*Minimum Torque Value*
50 mm	220 N.m
20 mm	70 N.m

8.3.2 The collar of the bung shall not show any distortion up to the application of torque values specified below:

Bung Size	*Minimum Torque Value*
50 mm	80 N.m
20 mm	40 N.m

8.4 Curling Test for Flanges

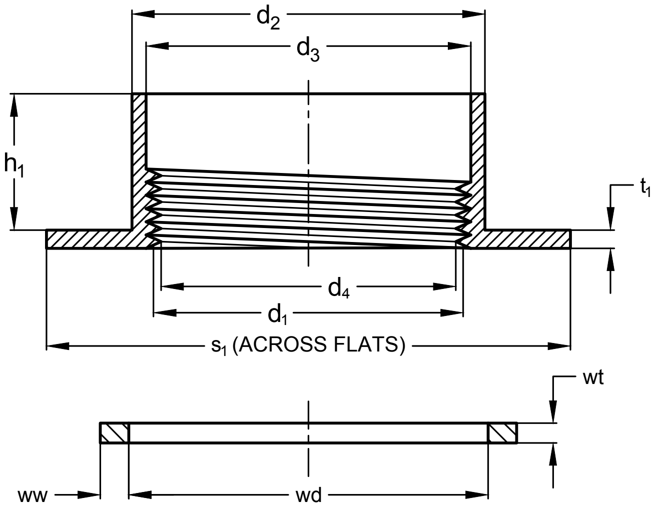
The curling test shall be performed on 1 in 1 000 flanges and shall be done on a fixture similar to the flange insertion die. The flange shall not show any crack/leak during curling through 160°.

9 MARKING

9.1 Each bung and flange shall be marked legibly and indelibly with the markings as agreed to between the manufacturer and the purchaser.

9.2 BIS Certification Marking

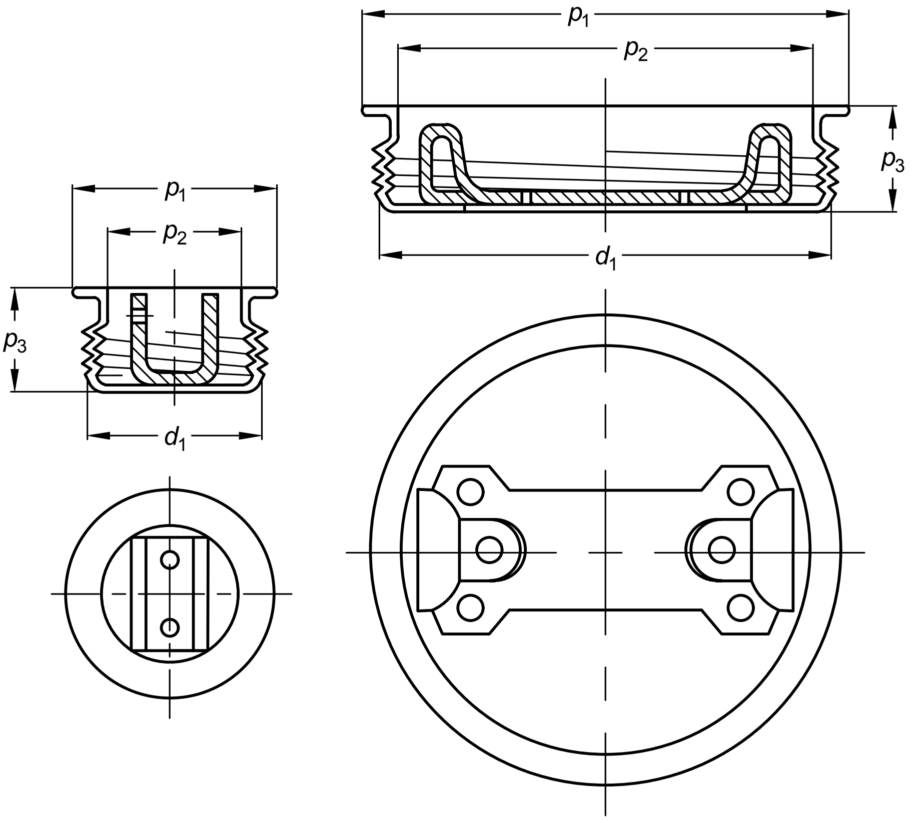
The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the *Bureau of Indian Standards Act*, 2016 and the Rules and Regulations framed thereunder, and the products may be marked with the Standard Mark.



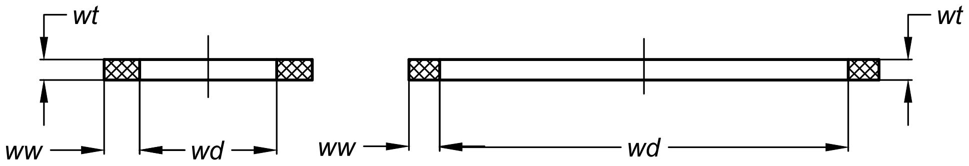
All dimensions in millimetres.

Nominal Size of Flange	Dimensions									
	Steel Flange							Flange Gasket		
	Pitch Diameter d_1 (Nominal)	d_2 ± 0.30	d_3 ± 0.30	d_4 ± 0.50	h_1 ± 0.50	s_1 ± 0.30	t_1 ± 0.30	*wd* ± 1.00	*ww* ± 0.50	*wt* ± 0.50
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
50	58.135	62.40	60.40	57.10	15.80	77.90	2.70	60.50	3.25	2.60
20	25.279	29.00	27.20	24.50	12.90	43.70	2.50	27.20	2.40	2.60

Fig. 2 Dimensions of Flange and Flange Gasket



STEEL BUNGS

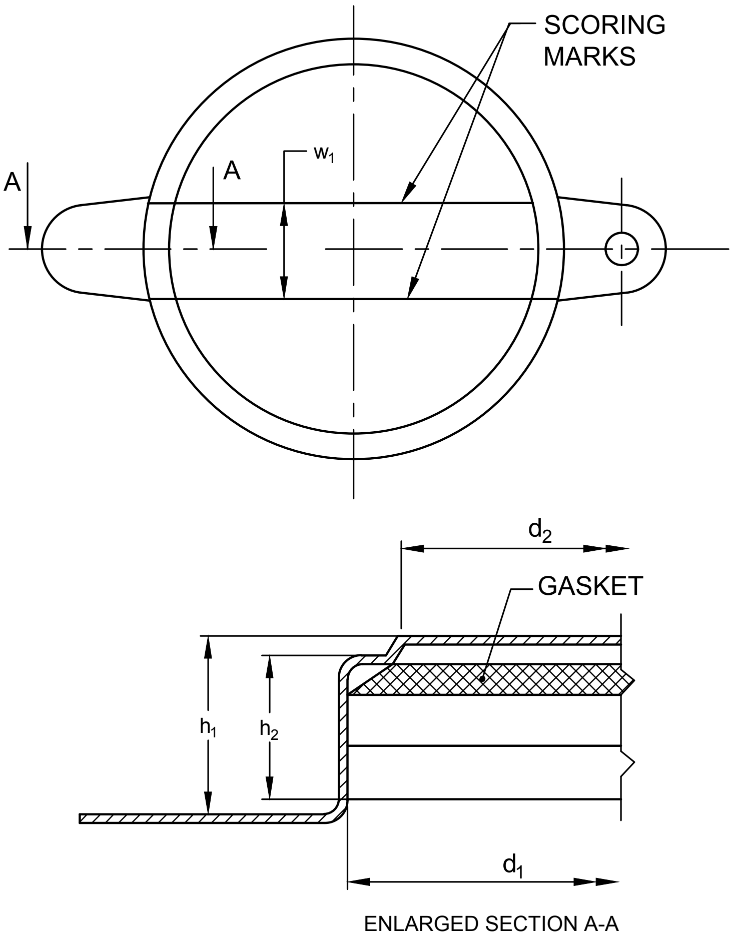


BUNGS GASKETS

All dimensions in millimetres.

Nominal Size of Bung	**Dimensions**						
	Steel Bung				**Bung Gasket**		
	Pitch Diameter d_1 (Nominal)	p_1 ± 0.50	p_2 ± 0.70	p_3 ± 0.70	*wd* ± 1.00	*ww* ± 0.50	*wt* ± 0.50
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
50	58.135	61.30	53.60	15.50	50.50	2.75	2.70
20	25.279	28.10	20.50	13.70	20.30	2.60	2.50

FIG. 3 DIMENSIONS OF BUNG AND BUNG GASKET

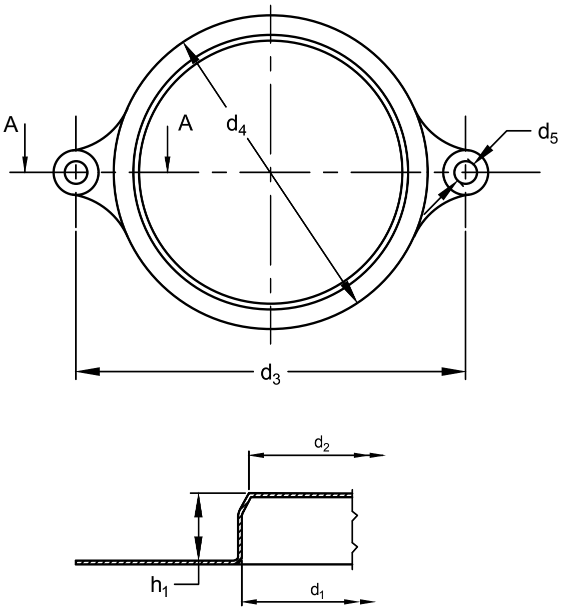


ENLARGED SECTION A-A

All dimensions in millimetres.

Nominal Size of Flange	Dimensions				
	d_1	d_2	h_1	h_2	w_1
(1)	(2)	(3)	(4)	(5)	(6)
50	69.80 ± 0.50	61.50 ± 1.60	11.50 ± 0.60	9.50 ± 0.60	12.00 ± 1.60
20	35.10 ± 0.50	29.00 ± 0.80	8.30 ± 0.60	6.80 ± 0.60	10.00 ± 1.60

Fig. 4 Dimensions of Capseals

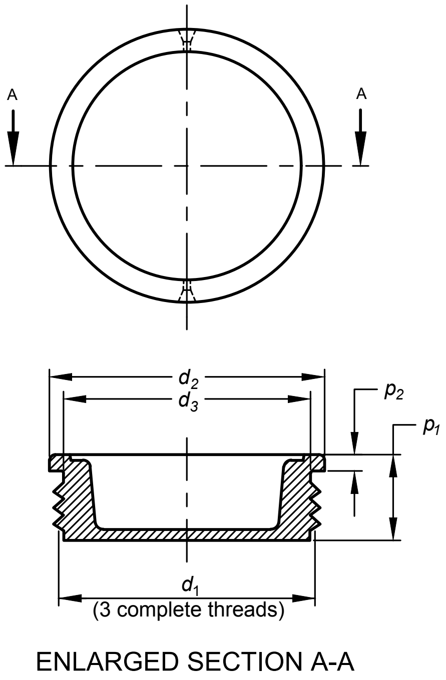


ENLARGED SECTION A-A

All dimensions in millimetres.

Nominal Size of Tag Ring	Dimensions					
	d_1	d_2	d_3	d_4	d_5	h_1
(1)	(2)	(3)	(4)	(5)	(6)	(7)
50	67.00 ± 1.60	63.50 ± 0.40	86.00 ± 2.60	76.00 ± 1.60	5.00 ± 0.40	6.00 ± 0.40
20	32.00 ± 1.00	31.00 ± 0.40	46.00 ± 1.50	41.00 ± 1.50	5.00 ± 0.40	5.00 ± 0.40

FIG. 5 DIMENSIONS OF TAG RING



All dimensions in millimetres.

Nominal Size of Zinc Bung	Dimensions				
	d_1	d_2 ± 0.80	d_3 ± 0.80	p_1 ± 0.40	p_2 ± 0.40
(1)	(2)	(3)	(4)	(5)	(6)
50	57.63 – 58.13	61.00	56.00	14.80	3.00
20	24.68 – 25.13	28.00	22.50	13.50	3.00

Fig. 6 Dimensions of Zinc Bung

ANNEX A

(*Foreword*)

COMMITTEE COMPOSITION

Metal Containers Sectional Committee, PGD 38

Organization	*Representative(s)*
Indian Institute of Packaging, Mumbai	Dr N. C. Saha (***Chairman***)
Ace Cans Manufacturing Co, Mumbai	Shri Kanakraj Parmar Shri Dinesh Parmar (*Alternate*)
Asian Paints Limited, Mumbai	Shri Navninder Singh
Balmer Lawrie & Co Ltd, Mumbai	Shri R. S. Patel Shri Amit Mitra (*Alternate*)
Balmer Lawrie-Van Leer Ltd, Mumbai	Shri Tushar Shirwalkar Shri Sunil Gupta (*Alternate*)
Caps and Containers, Mumbai	Shri O. P. Agarwal Ms. Manisha Agarwal (*Alternate*)
Central Insecticide Laboratory, Faridabad	Dr A. K. Sinha
Hindustan Petroleum Corp Ltd, Mumbai	Shri H. Padmanabhan Shri Sunil Shankar Patil (*Alternate*)
Hindustan Tin Works Ltd, New Delhi	Shri Gajendra Singh Shri R. K. Tyagi (*Alternate*)
Indian Institute of Packaging (IIP), Delhi	Dr Tanweer Alam Shri S. Juikar (*Alternate*)
Indian Oil Corp Ltd, Mumbai	Shri S. R. Sirpuram Shri Vivek Salvi (*Alternate* I) Ms Anusha Gollapudi (*Alternate* II)
Kaira Can Company Ltd, Mumbai	Shri D. N. Prabhu Shri K. M. Shenoy (*Alternate*)
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Nestle House, Gurgaon	Shri Biswajit Basu Shri Barun Banerjee (*Alternate*)
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The Tinplate Co of India Ltd, Jamshedpur	Shri Abesh Chatterjee Shri S. J. Dey (*Alternate* I) Mr Subrata Sadhu (*Alternate* II)
BIS Directorate General	Shri Deepak Jain, Scientist 'F' and Head (PGD) [Representing Director General (*Ex-officio*)]

Member Secretary

Shri Krishna Sudheendran
Scientist 'B' (PGD) BIS

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Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

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